

Ölçüm Sonuçları ve Analiz Raporu

(Measurement Results and Analysis Report)

AB-1115-T

01232

22.06.2021

MÜŞTERİNİN ADI / ADRESİ
(CUSTOMER NAME/ADDRESS)

ODSEL Elektronik San.ve Tic.A.Ş
Orta Ölçekli San.Böl. Muradiye Mah. 16.Sok. No:3 PK:45140 Yunusemre/Manisa
Tel: 0236 214 06 30

TALEP/RAPOR NO
(ORDER/REPORT NO)

1232

NUMUNENİN KABUL TARİHİ
(THE DATE OF RECEIPT OF TEST ITEM)

18.06.2021

ÖLÇÜMÜN YAPILDIĞI TARİH
(DATE OF TEST)

21.06.2021

NUMUNENİN ADI VE TARİFİ
(NAME AND IDENTITY OF TEST ITEM)

DS12-111-40FNN-K07
DS SERİSİ

UYGULANAN STANDART/METOD
(APPLIED STANDARD/METHOD)

TS EN 13032-1:2004 + A1:2012 Light and Lighting :Measurement and Presentation of
Photometric Data of Lamps and Luminaires-Part1: Measurement and File.
IES-LM-79-08 Approved Method : Electrical and Photometric Measurements of Solid-State
Lighting Products

RAPORUN SAYFA SAYISI
(NUMBER OF PAGES OF THE REPORT)

18

AÇIKLAMALAR
(EXPLANATIONS)

Gonyofotometre sonuçlarını içerir.

Deney laboratuvarı olarak faaliyet gösteren EVATEG Optik Laboratuvarı, TÜRKAK'TAN AB- 1115-T akreditasyon numarası ile TS EN 13032-1:2004+A1:2012 ve IES-LM-79-08 standardına göre akredite edilmiştir. (EVATEG Optical Laboratory accredited by TÜRKAK under registration number AB-1115-T for TS EN 13032-1:2004+A1:2012 and IES-LM-79-08 as test laboratory.)

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınırılığı konusunda Avrupa Akreditasyon Birliği (EA) ile Çok Taraflı Anlaşma ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşması imzalamıştır. (Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test report.)

Mühür

(Seal)

TS EN ISO/IEC 17025
AB-1115-T

evateg

Tarih

(Date)

23.06.2021

Ölçüm Sorumlusu

(Person in charge of measurement)

Songül Evren

Onaylayan

(Approval)

Prof. Dr. Mehmet ARIK

(vekaleten) Songül Evren

Sonuçlar sadece yukarıda tanımlanan numune için geçerlidir. Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz.

İmzasız ve mühürlü raporlar geçersizdir. (Results are only valid for the sample which is defined above. This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.) 6-R.001-Rev.13-23.03.2021

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LABORATUVAR BİLGİSİ (LABORATORY INFORMATION)

ADRES (ADDRESS)	Özyeğin Üniversitesi Çekmeköy Kampüsü Nişantepe Mah. Orman Sok. 34794 Çekmeköy – İSTANBUL
ÇEVRE ŞARTLARI (ENVIRONMENTAL CONDITIONS)	25 °C ± 1, %40RH ± %10 Laboratuvarımıza kabul edilen ürünün 25°C'de +/- 1 sapmayla ve bağıl nemi %40'de ± %10 sapma ile ortam şartlarında standartlara uygun olarak ölçümü tamamlanmıştır.
UYGUNLUK BEYANI (STATEMENT OF COMPLIANCE)	Sonuçların uygunluğuna müşteri karar verecektir.

NUMUNE BİLGİLERİ (SAMPLE INFORMATION)

TANIMI (DESCRIPTION)	DS12-111-40FNN-K07
MODELİ/KODU (MODEL/CODE)	DS SERİSİ
BEYAN GÜCÜ (RATED POWER)	16.6W
ÇALIŞMA GERİLİMİ (RATED VOLTAGE)	24V DC
ÇALIŞMA FREKANSI (RATED FREQUENCY)	-
ÇALIŞMA AKIMI (RATED CURRENT)	-
IŞIK KAYNAĞI TİPİ / MARKASI (LIGHT SOURCE TYPE / MARK)	LUXAR
IŞIK KAYNAĞI AÇIKLAMASI (LIGHT SOURCE DESCRIPTION)	-
IŞIK KAYNAĞI SAYISI (NUMBER OF SOURCE)	1
BALAST/LED SÜRÜCÜ BİLGİLERİ (BALAST/LED DRIVER INFORMATION)	-
LENS MARKASI/KODU (LENS MARK / CODE)	-
DUY TİPİ (LAMP-HOLDER TYPE)	-
ATEŞLEYİCİ BİLGİLERİ (IGNITOR INFORMATION)	-



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DENEY EKİPMANLARI (TEST EQUIPMENTS)

GONIOPHOTOMETER (GONYOFOTOMETRE) (LMT / GO 1920-V)				
Cihaz Adı	Cihazın Markası	Cihazın Modeli	Son Kal.Tarihi	Gelecek Kal.Tarihi
Digital Power Meter	Yokogawa	WT310	17.03.2021	17.03.2023
Programmable AC Source	Chroma	6415	16.03.2021	16.03.2023
Fotometre Başlığı	LMT	06B3072	15.03.2021	15.03.2023
Çizgi Lazer	Bosch	GCL 2-50 C	-	-
Hava İstasyonu	PCE Instruments	PCE-FWS 20	17-18.12.2020	18.12.2022
Hava Hızı Ölçer	Prova	AVM 07	30.12.2020	30.12.2022



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ÖLÇÜM SONUÇLARI (MEASUREMENT RESULTS)

KARARLI HAL SÜRESİ (STEADY STATE TIME)	45 dk
ORTALAMA GERİLİM (AVERAGE VOLTAGE) (V)	24V DC
FREKANS (FREQUENCY) (HZ)	-
AKTİF GÜÇ (ACTIVE POWER) (W)	15,96
ORTALAMA AKIM (AVERAGE CURRENT) (MA)	665
GÜÇ FAKTÖRÜ (POWER FACTOR) (PF)	-
IŞIK AKISI (LUMINOUS FLUX) (LM)	1524
VERİMLİLİK (EFFICIENCY) (LM/W)	95
MERKEZİ YOĞUNLUK (0,0) (CENTRAL INTENSITY) (CD)	476
RENKSEL GERİVERİM İNDEKSİ (COLOR RENDERING INDEX) (CRI)	-
RENK SICAKLIĞI (COLORATED COLOR TEMPERATURE) (CCT) (K)	-



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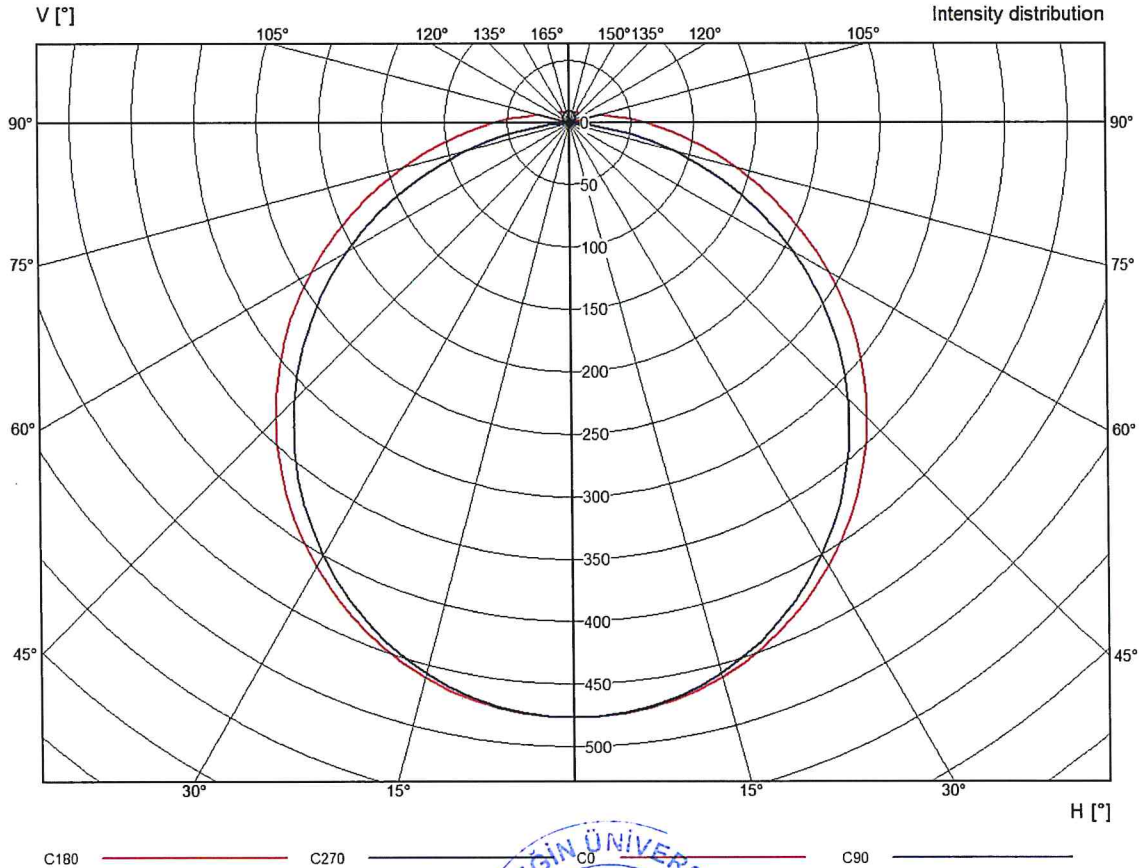
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DENEYE İLİŞKİN GRAFİKLER VE TABLOLAR (GRAPHICS AND TABLES RELATED TO EXPERIMENT)

FOTOMETRİ DİYAGRAMLARI (PHOTOMETRY DIAGRAMS)

Kutup Diyagramı (Polar Diagram)



Ölçüm Sonuçları ve Analiz Raporu

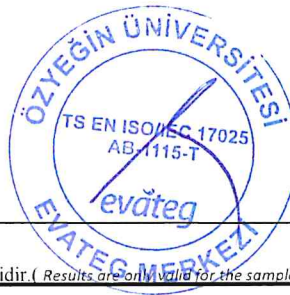
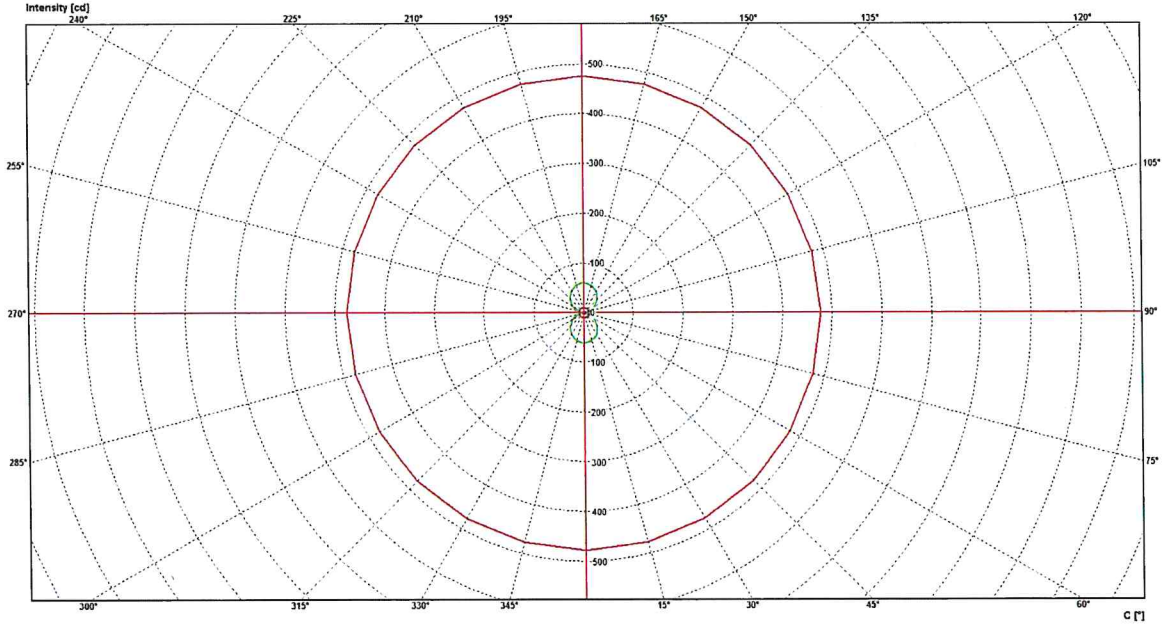
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Koni Diyagramı (Cone Diagram)



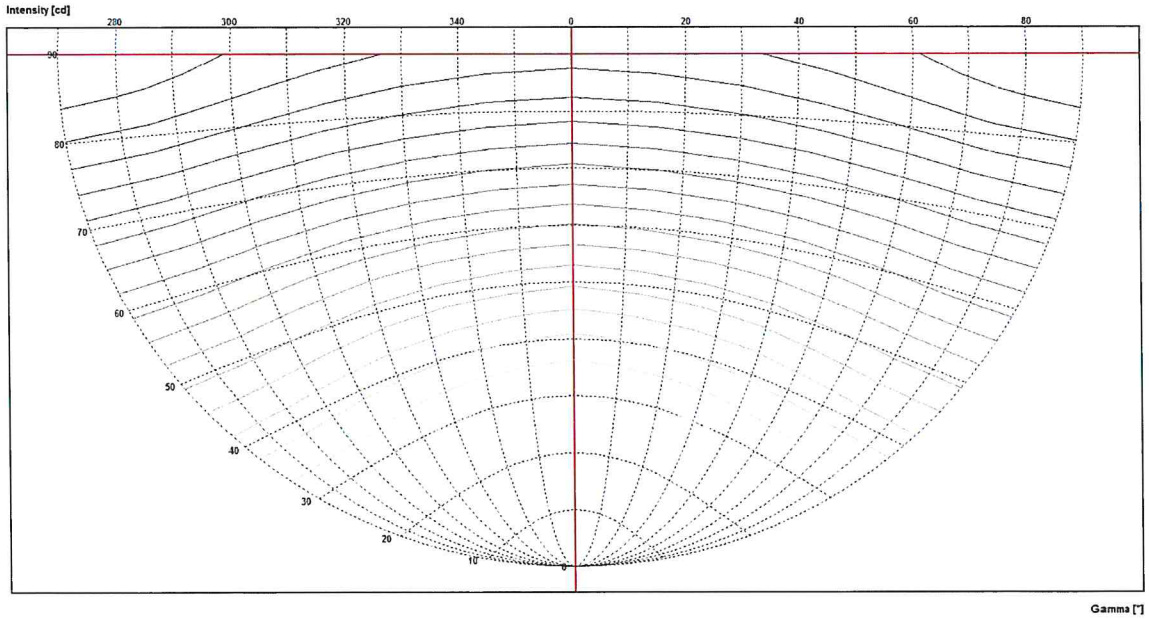
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Isocandela Diyagramı (Isocandela Diagram)



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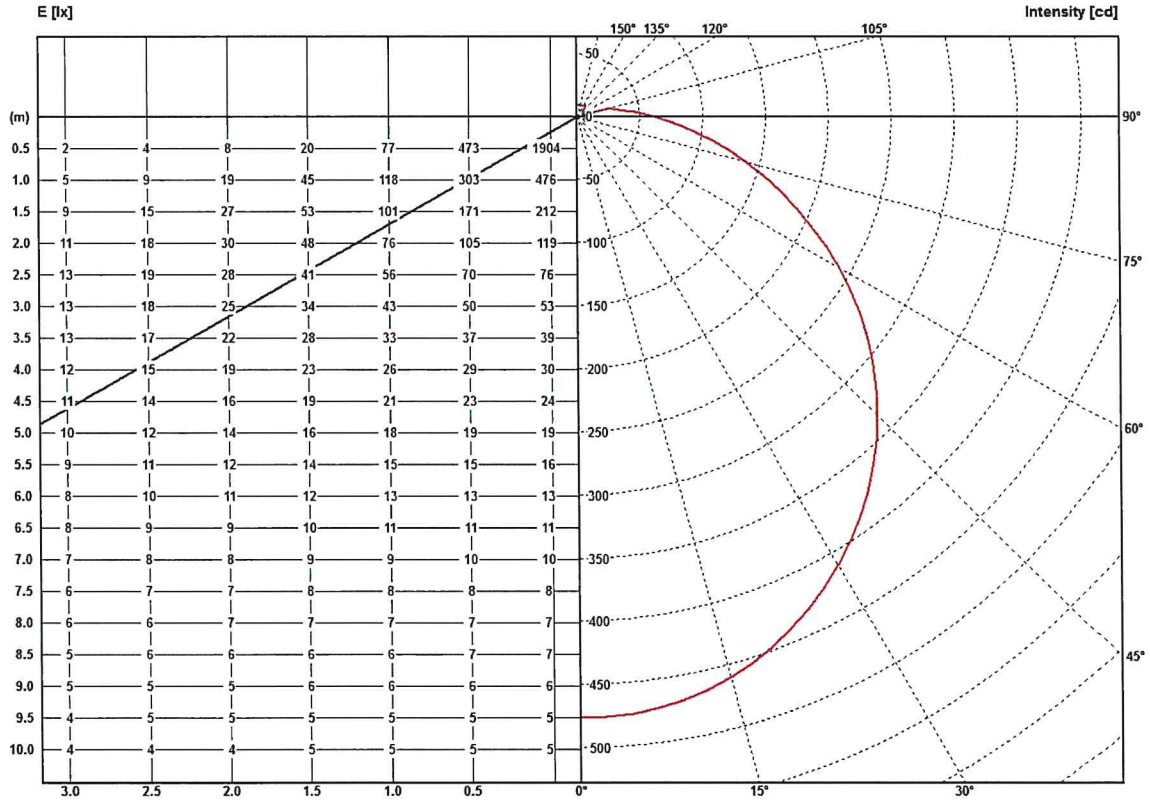
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Lüks-Kandela Diyagramı (Illuminance and Intensity Diagram)



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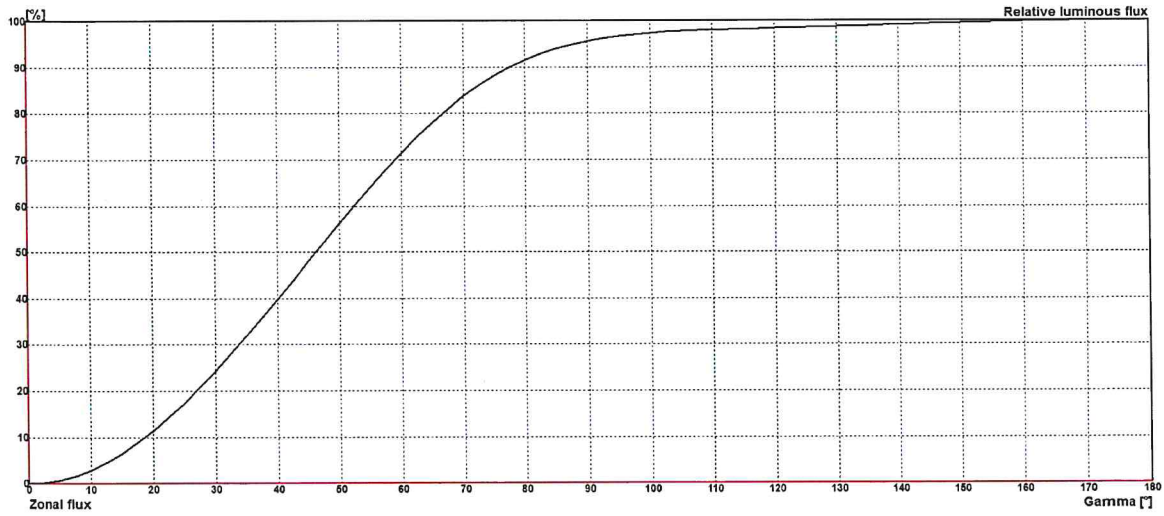
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Bölgesel Akı Diyagramı (Zonal Flux Diagram)



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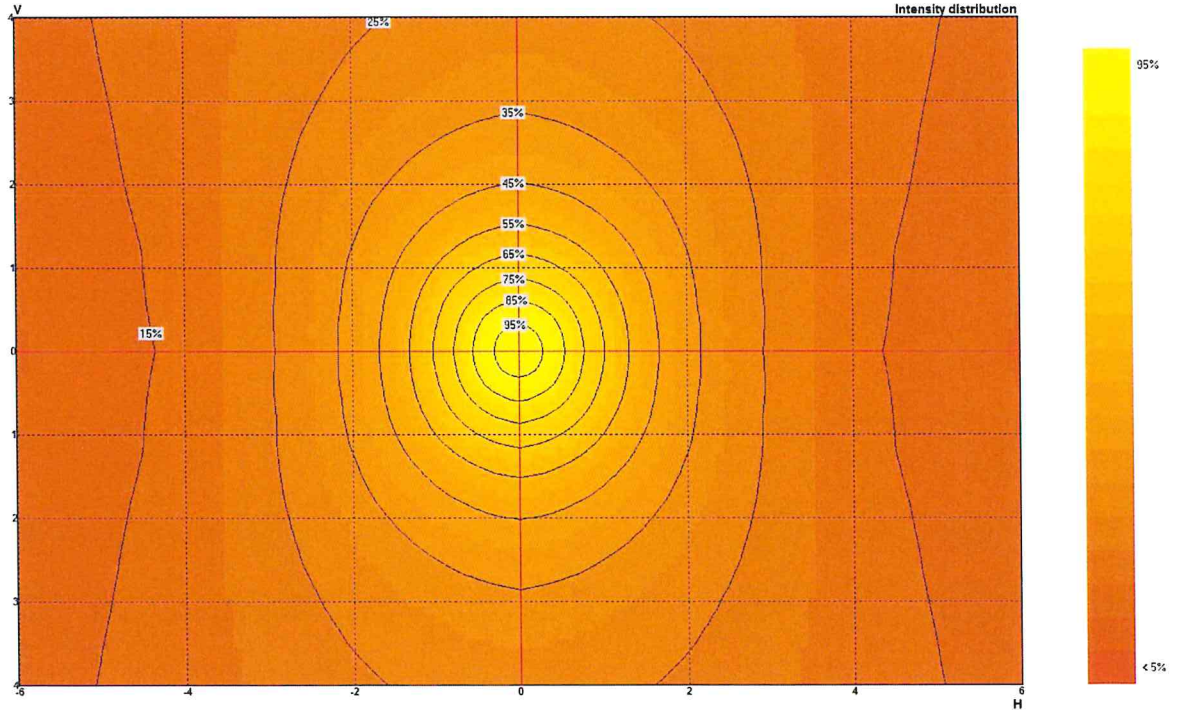
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Eşegri Diyagramı (Isoline Diagram)



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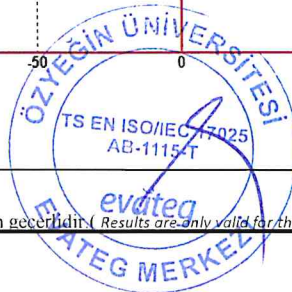
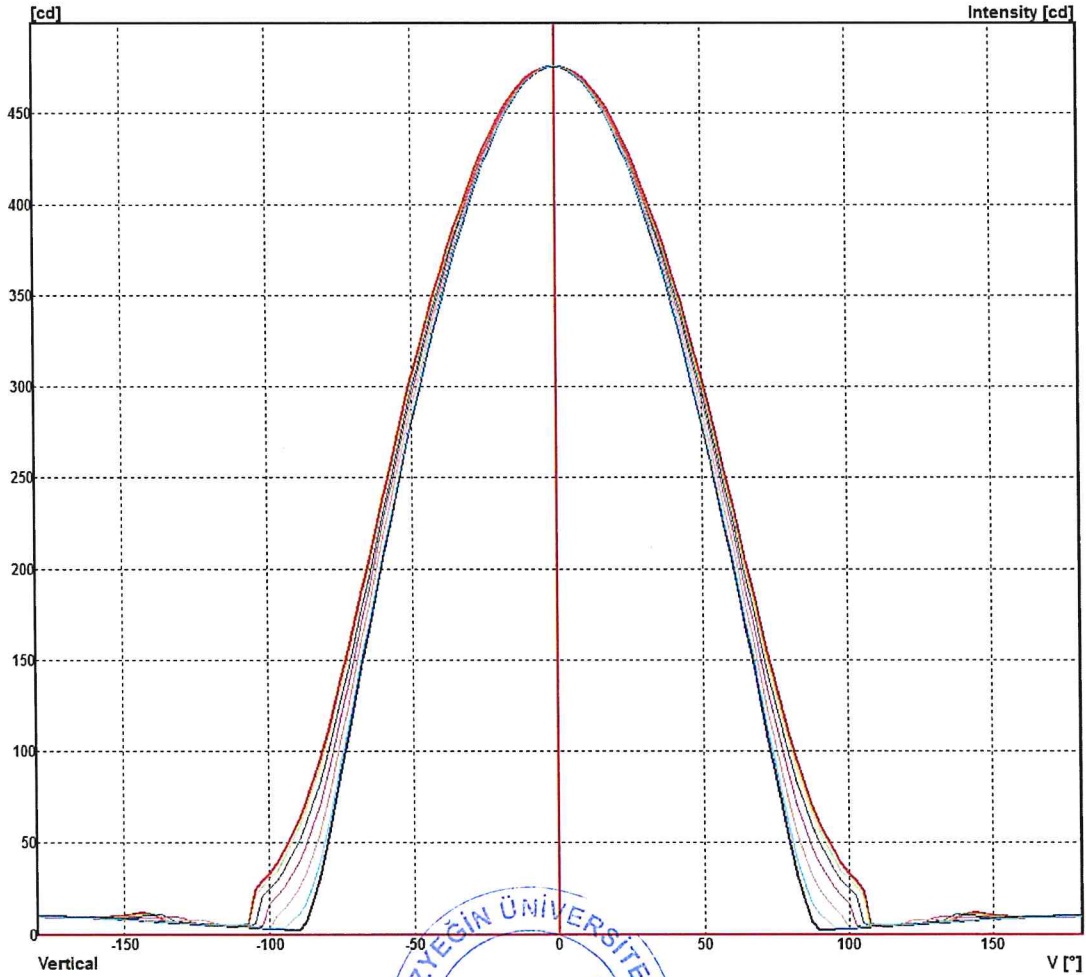
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Kartezyen Diyagram (Cartesian Diagram)



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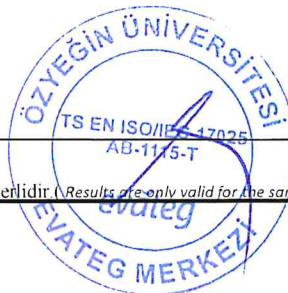
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UGR Kamaşma Tablosu (UGR Glare Diagram)

Ceiling reflectance		0.7		0.5		0.3	0.7		0.5		0.3
Wall reflectance		0.5	0.3	0.5	0.3		0.5	0.3	0.5	0.3	
Floor cavity reflectance		0.2									
Room dimension		Viewed crosswise					Viewed endwise				
2H	2H	22.0	23.6	22.5	24.0	24.4	21.5	23.0	21.9	23.4	23.9
	3H	24.0	25.5	24.5	25.9	26.3	23.0	24.5	23.5	24.9	25.4
	4H	25.0	26.4	25.5	26.8	27.3	23.7	25.0	24.1	25.5	25.9
	6H	26.0	27.3	26.5	27.7	28.2	24.1	25.4	24.6	25.8	26.3
	8H	26.5	27.7	27.0	28.2	28.7	24.2	25.4	24.7	25.9	26.4
	12H	27.0	28.2	27.5	28.7	29.2	24.3	25.4	24.7	25.9	26.4
4H	2H	22.8	24.1	23.2	24.6	25.0	22.3	23.7	22.8	24.1	24.6
	3H	24.9	26.1	25.4	26.6	27.1	24.1	25.3	24.6	25.8	26.3
	4H	26.1	27.2	26.6	27.7	28.2	24.9	26.0	25.4	26.5	27.0
	6H	27.3	28.2	27.8	28.7	29.3	25.4	26.4	26.0	26.9	27.4
	8H	27.9	28.7	28.4	29.3	29.8	25.6	26.5	26.1	27.0	27.6
	12H	28.5	29.4	29.1	29.9	30.5	25.7	26.6	26.3	27.1	27.7
8H	4H	26.5	27.3	27.0	27.9	28.4	25.4	26.3	25.9	26.8	27.4
	6H	27.8	28.6	28.3	29.1	29.7	26.1	26.9	26.7	27.4	28.0
	8H	28.6	29.3	29.2	29.9	30.4	26.5	27.1	27.0	27.7	28.3
	12H	29.5	30.1	30.1	30.6	31.2	26.7	27.2	27.2	27.8	28.4
12H	4H	26.5	27.3	27.0	27.8	28.4	25.5	26.4	26.1	26.9	27.5
	6H	28.0	28.6	28.5	29.2	29.8	26.4	27.1	27.0	27.6	28.2
	8H	28.8	29.4	29.4	29.9	30.5	26.8	27.3	27.3	27.9	28.5



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TM5 Kullanım Faktörleri (TM5 Utilization Factors)

Utilization factors			LOR=100.0% DLOR=95.6% ULOR=4.4%								
Room reflection			Room index								
C	W	F	0.75	1	1.25	1.5	2	2.5	3	4	5
0.70	0.50	0.20	57	65	72	77	84	89	93	97	100
	0.30		49	57	65	70	78	83	87	93	96
	0.10		43	51	59	64	73	78	83	89	93
0.50	0.50	0.20	55	62	69	74	81	85	88	92	95
	0.30		48	55	63	68	75	80	84	89	92
	0.10		43	50	58	63	70	76	80	86	89
0.30	0.50	0.20	53	60	66	71	77	81	84	88	91
	0.30		47	54	61	66	72	77	80	85	88
	0.10		42	49	56	61	69	74	77	82	86
0.00	0.00	0.00	40	46	53	58	64	69	72	77	80
			SHR NOM=1.50 SHR MAX=1.64 SHR MAX TR=1.86								



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LiTG Kullanım Faktörleri (LiTG Utilization Factors)

Ceiling	70	80	80	50	50	80	80	80	50	50	30	0
Wall	50	50	30	50	30	80	50	30	50	30	30	0
Working plane	20	30	30	30	30	10	10	10	10	10	10	0
Room indices	Utilization coefficients for ceiling mounted luminaires											
0.6	41	43	34	40	32	63	41	33	39	32	31	24
0.8	51	54	44	50	42	72	51	42	48	41	40	33
1	59	63	53	58	50	78	58	50	55	48	47	39
1.25	68	73	63	67	59	84	66	59	63	57	55	48
1.5	74	80	70	73	66	87	72	65	68	62	61	54
2	82	89	80	81	74	92	79	73	75	70	68	61
2.5	88	96	87	87	81	95	84	79	80	76	74	67
3	92	101	94	92	86	98	89	84	84	80	78	72
4	97	107	100	96	92	100	92	88	88	85	82	76
5	100	111	105	100	96	101	95	92	91	88	86	80
Room indices	Utilization coefficients for pendant mounted luminaires											
0.6	38	39	31	38	31	59	38	31	37	31	30	24
0.8	48	50	41	48	41	68	48	40	47	40	39	33
1	56	58	49	56	48	74	55	48	53	47	46	39
1.25	65	68	59	65	57	81	63	56	61	55	54	48
1.5	71	75	66	71	63	85	69	62	67	61	60	54
2	79	84	75	79	72	90	77	70	74	69	68	61
2.5	85	91	83	85	79	94	82	77	79	75	73	67
3	90	97	90	90	84	96	87	82	83	79	78	72
4	95	103	97	95	90	99	91	87	87	84	82	76
5	98	108	102	98	94	101	94	90	90	87	85	80



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IES Kullanım Faktörleri (IES Utilization Factors)

Ceiling	80	80	80	80	70	70	70	70	50	50	50	30	30	30	10	10	10	0
Wall	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Working plane	20 %																	
Cavity ratio	Utilization coefficients																	
1	107	102	98	94	104	100	96	92	95	92	89	91	88	85	86	84	82	80
2	98	90	83	77	95	88	81	76	83	78	74	80	75	71	76	73	69	67
3	89	79	70	64	86	77	69	63	73	67	61	70	64	60	67	62	58	56
4	81	69	61	54	79	68	60	53	65	58	52	62	56	51	60	54	50	48
5	74	60	51	44	71	59	50	44	57	49	43	54	48	42	52	46	42	39
6	67	53	44	38	65	52	44	37	50	43	37	48	42	36	47	40	36	34
7	62	48	39	33	60	47	39	32	45	38	32	43	37	31	42	35	31	29
8	57	43	34	28	55	42	34	28	40	33	28	39	32	27	38	31	27	25
9	54	40	31	25	52	39	31	25	37	30	25	36	29	24	35	28	24	22
10	51	37	28	22	49	36	28	22	34	27	22	34	26	22	32	26	22	20



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Bölgesel Akı Tablosu (Zonal Flux Table)

V	Imin	Imax	Imean	Flux [lm]	Total [lm]	LOR [%]	Total [%]
0.0	312.3	312.3	312.3	0.00	0.00	0.00	0.00
2.5	311.9	312.0	311.9	2.84	2.84	0.19	0.19
5.0	310.8	311.2	310.9	8.51	11.36	0.56	0.74
7.5	309.0	309.7	309.3	14.11	25.46	0.93	1.67
10.0	306.4	307.6	306.9	19.58	45.04	1.28	2.96
12.5	303.1	304.9	303.8	24.89	69.94	1.63	4.59
15.0	299.1	301.5	300.1	29.99	99.92	1.97	6.56
17.5	294.5	297.4	295.7	34.83	134.76	2.29	8.84
20.0	289.2	292.8	290.7	39.38	174.14	2.58	11.42
22.5	283.2	287.6	285.1	43.61	217.75	2.86	14.29
25.0	276.7	281.8	278.9	47.46	265.20	3.11	17.40
27.5	269.6	275.5	272.2	50.92	316.13	3.34	20.74
30.0	261.9	268.6	264.9	53.98	370.10	3.54	24.28
32.5	253.5	261.5	257.2	56.59	426.69	3.71	27.99
35.0	245.0	254.0	249.0	58.76	485.46	3.86	31.85
37.5	235.7	245.9	240.4	60.47	545.92	3.97	35.82
40.0	226.1	237.4	231.4	61.70	607.62	4.05	39.86
42.5	216.1	228.6	222.0	62.46	670.08	4.10	43.96
45.0	205.7	219.3	212.3	62.74	732.82	4.12	48.08
47.5	195.0	209.8	202.1	62.53	795.35	4.10	52.18
50.0	183.8	200.0	191.6	61.84	857.20	4.06	56.24
52.5	172.3	189.7	180.8	60.69	917.89	3.98	60.22
55.0	160.4	179.0	169.7	59.07	976.95	3.88	64.10
57.5	148.2	168.0	158.3	56.98	1033.93	3.74	67.83
60.0	135.8	156.9	146.6	54.47	1088.40	3.57	71.41
62.5	123.3	145.7	134.8	51.56	1139.96	3.38	74.79
65.0	110.1	134.5	122.9	48.28	1188.24	3.17	77.96
67.5	97.1	123.4	110.9	44.69	1232.93	2.93	80.89
70.0	83.7	112.4	98.8	40.83	1273.76	2.68	83.57
72.5	70.7	101.6	87.0	36.77	1310.53	2.41	85.98
75.0	57.4	90.9	75.4	32.58	1343.11	2.14	88.12
77.5	44.6	80.8	64.3	28.35	1371.46	1.86	89.98
80.0	32.3	71.2	53.8	24.19	1395.65	1.59	91.56
82.5	21.0	62.3	44.1	20.22	1415.86	1.33	92.89
85.0	11.4	54.2	35.7	16.59	1432.45	1.09	93.98
87.5	4.4	46.8	28.8	13.45	1445.90	0.88	94.86
90.0	1.6	40.4	23.5	10.91	1456.81	0.72	95.58

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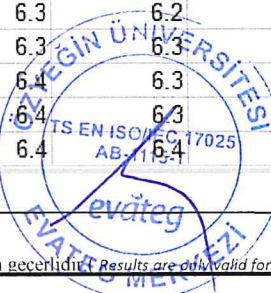
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Bölgesel Akı Tablosu Devamı (Zonal Flux Table Continue)

92.5	1.7	34.8	19.4	8.95	1465.76	0.59	96.16
95.0	1.9	30.1	15.8	7.34	1473.09	0.48	96.65
97.5	2.0	25.6	13.1	6.01	1479.10	0.39	97.04
100.0	2.1	22.0	10.8	4.93	1484.04	0.32	97.36
102.5	2.3	19.2	8.3	3.91	1487.94	0.26	97.62
105.0	2.5	15.9	5.9	2.87	1490.82	0.19	97.81
107.5	2.6	3.9	3.0	1.78	1492.59	0.12	97.93
110.0	2.7	3.6	3.0	1.19	1493.78	0.08	98.00
112.5	2.9	3.5	3.2	1.20	1494.98	0.08	98.08
115.0	3.0	3.5	3.3	1.23	1496.22	0.08	98.16
117.5	3.2	3.6	3.5	1.26	1497.48	0.08	98.25
120.0	3.4	4.5	3.7	1.32	1498.79	0.09	98.33
122.5	3.5	5.3	4.0	1.38	1500.17	0.09	98.42
125.0	3.7	5.2	4.1	1.40	1501.57	0.09	98.51
127.5	3.9	5.1	4.3	1.42	1502.99	0.09	98.61
130.0	4.0	6.0	4.6	1.46	1504.45	0.10	98.70
132.5	4.2	6.6	4.9	1.50	1505.94	0.10	98.80
135.0	4.4	6.4	5.2	1.53	1507.48	0.10	98.90
137.5	4.5	7.2	5.8	1.59	1509.07	0.10	99.01
140.0	4.7	7.7	6.1	1.64	1510.71	0.11	99.11
142.5	4.9	7.9	6.2	1.61	1512.31	0.11	99.22
145.0	5.1	7.6	6.1	1.51	1513.83	0.10	99.32
147.5	5.3	7.3	6.0	1.40	1515.23	0.09	99.41
150.0	5.4	6.8	5.9	1.29	1516.52	0.08	99.50
152.5	5.5	6.5	5.9	1.19	1517.71	0.08	99.57
155.0	5.7	6.3	5.9	1.09	1518.80	0.07	99.64
157.5	5.8	6.2	5.9	0.99	1519.80	0.07	99.71
160.0	5.9	6.0	5.9	0.89	1520.69	0.06	99.77
162.5	5.9	6.0	6.0	0.80	1521.49	0.05	99.82
165.0	6.0	6.1	6.1	0.70	1522.19	0.05	99.87
167.5	6.1	6.2	6.2	0.61	1522.80	0.04	99.91
170.0	6.1	6.3	6.2	0.50	1523.30	0.03	99.94
172.5	6.2	6.3	6.3	0.40	1523.70	0.03	99.97
175.0	6.3	6.4	6.3	0.29	1523.99	0.02	99.98
177.5	6.3	6.4	6.3	0.17	1524.16	0.01	100.00
180.0	6.4	6.4	6.4	0.06	1524.22	0.00	100.00



ÖZYEGİN ÜNİVERSİTESİ EVATEG MERKEZİ

(ÖZYEGİN UNIVERSITY EVATEG CENTER)

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Test
TS EN ISO/IEC 17025
AB-1115-T

Ölçüm Sonuçları ve Analiz Raporu

(Measurement Results and Analysis Report)

AB-1115-T

01232

22.06.2021

Test Ürünü Fotoğrafı (Photo of the Test Item)



Model : DS12-111-40FNN-K07
Tarih : 17.06.2021
LED ID : 30061281
CCT : 4000K

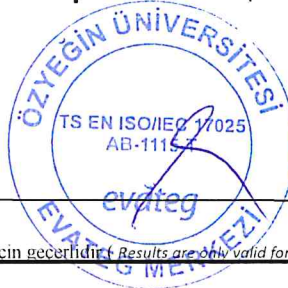
CE
Made in
Turkey

RoHS
Sınıf
IP

Güç : 16.6W
Giriş Gerilimi : 24V DC
Sınıf : III
IP : 40

LUXAR

Raporun Sonu (End of Report)



6-R.001/Rev.13/23.03.2021

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Sonuçlar sadece yukarıda tanımlanan numune için geçerlidir. (Results are only valid for the sample which is defined above.)